REMARKS

The above Amendments and these Remarks are in response to the Office action mailed January 14, 2008. Claims 1-2, 5-6 and 8 are amended, claim 7 is cancelled without prejudice, and new claims 9-10 are added. The amendments can find support in at least FIG. 3 and paragraphs [0017]-[0018]. Furthermore, claim 1 is amended including by incorporating the substance of certain features of claim 8 therein.

Claim Rejections Under 35 U.S.C. §102

Claims 1, 2, 7 and 8 are rejected under 35 U.S.C. §102(b) as being anticipated by AAPA.

Applicant respectfully submits that claims 1, 2 and 8 are now patentable, as follows:

Claim 1, as amended, recites in part:

> "A pulse width modulation current adjustment apparatus, comprising:
>
> ...
>
> wherein the triangle wave generator includes a first operational amplifier, a front resistor, a first feedback resistor, a second feedback resistor, a first current limiting resistor, a second operational amplifier, a second current limiting resistor, a capacitor, and a back grounding resistor;
>
> the front resistor electrically connects a negative terminal of the first operational amplifier to ground;
>
> the first feedback resistor, the second feedback resistor and the first current limiting resistor electrically connect to a positive

terminal of the first operational amplifier so as to form a zero-crossing comparator;

the second operational amplifier, the second current limiting resistor, the capacitor and **the back grounding resistor** together form an integrator;

the back grounding resistor electrically connects a positive terminal of the second operational amplifier to ground;

an output terminal of the first operational amplifier electrically connects to the positive terminal of the first operational amplifier via the first current limiting resistor and the first feedback resistor;

an output terminal of the second operational amplifier electrically connects to the negative terminal of the second terminal of the second operational amplifier via the capacitor;

the output terminal of the second operational amplifier further electrically connects to the positive terminal of the first operational amplifier via the second feedback resistor;

the output terminal of the second operational amplifier is configured for outputting the triangle wave voltage signal;

..." (Emphasis Added).

AAPA discloses a pulse width current adjustment apparatus, which includes a sawtooth wave generator 1, a comparator 2, a field effect transistor 3, a power supply 7, current limiting resistors 4, 5, and a modulation voltage source 6 (see paragraph [0002] and FIG. 3).

FIG. 6 of AAPA discloses the circuit of the sawtooth wave generator 1. In FIG. 6 of AAPA, the sawtooth wave generator 1 includes a second operational amplifier similar to the second operational amplifier recited in amended claim 1. However, in FIG. 6 of AAPA, it is distinctly seen that

the positive terminal of the second operational amplifier does not electrically connect to anything.

Amended claim 1 recites "the back grounding resistor electrically connects a positive terminal of the second operational amplifier to ground". In one embodiment of this feature, the positive terminal of the second operational amplifier 16 electrically connects to **the back grounding resistor 25**, and then connects to ground (see FIG. 3).

Therefore, no element of AAPA (specifically, the resistor R3 in FIG. 6) can be regarded as teaching or suggesting the back grounding resistor of the present invention. That is, AAPA fails to disclose, teach or suggest the back grounding resistor as recited in amended claim 1. Thus AAPA fails to teach or suggest "**the back grounding resistor** electrically connects a positive terminal of the second operational amplifier to ground", and fails to teach or suggest "the second operational amplifier, the second current limiting resistor, the capacitor and **the back grounding resistor** together form an integrator", as recited in amended claim 1.

Applicant further submits that the novel physical features of amended claim 1 produce new and unexpected results over AAPA. The sawtooth wave generator 1 in AAPA does not include a back grounding resistor. Instead, the sawtooth wave generator 1 has two integral paths, i.e. a forward one D1-R3-C and a backward one C-R4-D2. Therefore the sawtooth wave signal generated from the sawtooth wave generator 1 includes both even harmonics and odd harmonics, and includes a considerable percentage of high frequency harmonics. This induces high frequency noise in the corresponding current adjustment apparatus, and directly affects the stability of output current (see paragraph [0004]).

In contrast, in amended claim 1: the triangle wave generator includes the back grounding resistor; the back grounding resistor electrically connects the positive terminal of the second operational amplifier to ground; and the second operational amplifier, the second current limiting resistor, the capacitor and the back grounding resistor together form an integrator. Thus the triangle wave voltage signal generated from the triangle wave generator consists only of odd harmonics, and the percentage of high frequency harmonics of the triangle wave voltage signal is low. Accordingly, the high frequency noise of the present current adjustment apparatus is reduced, and the stability of the current output from the present current adjustment apparatus is high (see paragraph [0019]).

For at least the above reasons, amended claim 1 is submitted to be novel, unobvious, and patentable over AAPA under both 35 U.S.C. §102 and 35 U.S.C. §103. Reconsideration and withdrawal of the rejection of amended claim 1 are requested.

Claim 2 depends from amended claim 1. It is submitted that FIG. 5 of AAPA does not provide any additional teaching to overcome the shortfalls in the teachings of AAPA as asserted above in relation to amended claim 1. Therefore, claim 2 is also novel, unobvious and patentable over AAPA under both 35 U.S.C. §102 and 35 U.S.C. §103.

Claim 7 has been cancelled without prejudice, therefore the rejection relating thereto is now moot.

Amended claim 8 recites a triangle wave generator used in a pulse width modulation current adjustment apparatus. Amended claim 8 essentially includes the features of amended claim 1 discussed above, which features are asserted to render amended claim 1 patentable over AAPA. For reasons similar to those asserted above in relation to amended

claim 1, amended claim 8 is submitted to be novel, unobvious, and patentable over AAPA under both 35 U.S.C. §102 and 35 U.S.C. §103.

Claim Rejections Under 35 U.S.C. §103

Claims 3-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Figure 4 of AAPA.

Applicant refers to and relies on the above assertions whereby amended claim 1 is unobvious and patentable over AAPA under 35 U.S.C. §103. Claims 3-6 depend from amended claim 1. Therefore, claims 3-6 are also unobvious and patentable over AAPA under 35 U.S.C. §103(a).

Claims 1 and 3-7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Haas (US 3,621,282).

Haas discloses a sawtooth generator for generating a sawtooth wave signal. However, from FIGS. 1-2 of Haas, it is distinctly seen that the sawtooth generator only includes a comparator. Haas fails to teach or suggest the second operational amplifier and the back grounding resistor recited in amended claim 1.

Therefore, Haas fails to teach or suggest "**the back grounding resistor** electrically connects a positive terminal of the second operational amplifier to ground", and fails to teach or suggest "the second operational amplifier, the second current limiting resistor, the capacitor and **the back grounding resistor** together form an integrator", as recited in amended claim 1.

If further argument is needed, amended claim 1 incorporates the substance of certain features of claim 8 therein, which features are believed

to have rendered claim 8 as previously presented novel, unobvious and patentable over Haas.

For at least the above reasons, amended claim 1 is submitted to be unobvious and patentable over Haas under 35 U.S.C. §103(a). Reconsideration and withdrawal of the rejection and allowance of amended claim 1 are requested.

Claims 3-6 depend from amended claim 1. Therefore, claims 3-6 are also unobvious and patentable over Haas under 35 U.S.C. §103(a).

Claim 7 has been cancelled without prejudice, therefore the rejection relating thereto is now moot.

New Claims

Claim 9 depends from independent claim 8, and recites additional subject matter. It is submitted that the subject matter of claim 9 recites a characteristic of the triangle wave generator, and that such subject matter should be accorded full patentable weight. It is believed that claim 9 represents patentable subject matter.

Claim 10 depends from independent claim 1, and recites additional subject matter. It is submitted that the subject matter of claim 10 recites a characteristic of the triangle wave generator, and that such subject matter should be accorded full patentable weight. It is believed that claim 10 represents patentable subject matter.

In view of the above claim amendments and remarks, the subject application is believed to be in a condition for allowance, and an action to such effect is earnestly solicited.

CONCLUSION

Applicants submit that the foregoing Amendment and Response place this application in condition for allowance. If Examiner believes that there are any issues that can be resolved by a telephone conference, or that there are any informalities that can be corrected by an Examiner's amendment, please call the undersigned at 714.626.1240.

Respectfully submitted,
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